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ABSTRACT

Designed to analyze and describe the transformational operations in sentences in written compositions, this test contains a list of 27 possible transformations, all variations of four basic transformational operations: addition, deletion, reordering, and combining. The developer reports an interrater reliability coefficient of .94. [This document is one of those reviewed in The Research Instruments Project (TRIP) monograph "Measures for Research and Evaluation in the English Language Arts" to be published by the Committee on Research of the National Council of Teachers of English in cooperation with the ERIC Clearinghouse on Reading and Communication Skills. A TRIP review which precedes the document lists its category (Writing), title, author, date, and age range (intermediate--postsecondary), and describes the instrument's purpose and physical characteristics.] (RB)

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ED 091747

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Measures for Research and Evaluation
in the English Language Arts

TRIP is an acronym which signifies an effort to abstract and make readily available measures for research and evaluation in the English language arts. These measures relate to language development, listening, literature, reading, standard English as a second language or dialect, teacher competencies, or writing. In order to make these instruments more readily available, the ERIC Clearinghouse on Reading and Communication Skills has supported the TRIP committee sponsored by the Committee on Research of the National Council of Teachers of English and has processed the material into the ERIC system. The ERIC Clearinghouse accession numbers that encompass most of these documents are CS 201320 -CS 201325.

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CS 201352

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Category: Writing

Title: Transformational Analysis of Compositions

Author: Mary M. Dupuis

Age Range: Intermediate-Post Secondary

Description of Instrument:

Purpose: To analyze and describe the transformational operations in sentences in written compositions.

Date of Construction: 1972

Physical Description: TAC is a list of twenty-seven possible transformations, all variations of four basic transformational operations: addition, deletion, reordering, and combining. It is presented in its entirety below:

TABLE I. POSSIBLE TRANSFORMATIONS

*1. Passive - A, R, (D)

*2. Negative - A, (R)

*3. Relativization - C, D, (A)

4. Pre- and Post-nominal Adjectives, Post-Determiner Quantifiers, Compound Nouns, N+N - C, D

5. Possessives, including Possessive pronouns - C, D

6. Time, Place Deletion - D

7. Complementization, Nominalization (Factive nominals, infinitive and gerund phrases) - C, D

8. Indirect Question - C, D

*9. "It" Replacement - C, D, (R)

10. VP Complements (Infinitive, gerund phrases) - C, D

*11. Comparison - C, D, (A)

12. a. Prepositional Phrases - C, D

b. Adverb Clauses - C, D

c. Additional Deletion from clause to form verbal phrases with preposition - A, D

13. Indirect Object - R, D

14. Extraposition, and Pre- or Post-posing of Elements - R

15. "It" Deletion - D

16. "That" Deletion - D

17. Pronominalization, including reflexives (exclude first and second person and indefinite pronouns) - A, D

18. Simple Conjunction without a common morpheme - A

*19. Conjunction with a common morpheme or where D occurs - C, (D)

*20. Non-restrictive Clauses (conjunction + relative) - R, (A); Appositives - R, D, (A)

21. Gapping - A, D

*22. Inversions, especially question-forms - R, (A)

*23. Wh-forms - A, D, (R)

24. Expletive "there", Indefinite "it" - A, R

25. Cleft Sentence - A, R

26. Ellipses and Reductions (as in conversational forms) - D

27. Emphatic Forms of Verbs (usually "do") - A

KEY	Total Possible Operations and Combinations	
A - Addition	A - 3	CD - 11
D - Deletion	D - 4	RD - 2
C - Combining	C - 1	ACD - 2
R - Reordering	R - 3	ARD - 3
* - Optional element in this transformation; Check for its presence.	AR - 6	CRD - 1
	AD - 4	

Using the TAC, an analyst would code sentences from a composition as in the following two examples:

17 10 12a 4
1. It was an operation to remove a growth from the food tube.

Summary: AD-1, CD-3

22 4 26,3 4 12a
2. Pictured is a surgical team performing a heart operation on
3A 4, 14 4
Mr. Kenneth Moca, who two weeks ago had a heart attack which

4 12a 12a 12a 4
caused an irregular flow of blood through one of the major valves.

Summary: D-1, R-2, CD-11, ACD-2

Validity, Reliability, and Normative Data

TAC is based on transformational-generative grammar.

The developer reports an interrater reliability coefficient of .94.

The table below presents the mean number of occurences of the nine transformational variables in a written sample of 500 words from sixty ninth and eleventh graders. These students had grade averages lower than "C" in English and below-average School and College Ability Test (SCAT) scores

TABLE II

MEANS AND STANDARD DEVIATIONS
OF THE TRANSFORMATIONAL VARIABLES

Variable	Grade 9		Grade 11		Total Group	
	x	s.d.	x	s.d	x	s.d.
A	14.83	5.32	15.03	5.83	14.93	5.54
D	15.48	7.27	16.55	8.66	16.03	7.97
R	12.66	5.30	12.03	4.50	12.33	4.87
AR	4.97	3.76	3.94	2.19	4.43	3.07
AD	41.55	14.73	33.61	10.10	37.45	13.07
CD	123.28	14.30	123.39	14.07	123.33	14.06
RD	1.93	1.53	2.26	1.61	2.10	1.57
ARD	4.69	3.07	4.32	2.66	4.50	2.85
ACD	3.00	2.42	2.90	2.21	2.95	2.30

Ordering Information:

EDRS

Procedures

1. Written sample for each student is 500 words to the nearest sentence end.

2. Each sentence is transferred to an analysis sheet.

3. Each sentence is analyzed by noting each transformation used and placing its number over the word in the sentence where it occurs (refer to transformation list).

4. A sentence is classified as deviant if it contains one or more of the errors bei-g counted. Errors are noted by underlining the word or phrase containing the error. The type of error is noted on the list.

5. After each student's sentences are analyzed individually, a tally is made to produce his final totals.

Possible Transformations

* 1. Passive - A,R, (D)

* 2. Negative - A, (R)

* 3. Relativization - C,A, (D)

4. Pre- and Post-nominal Adj., Post-Det Q, Cpd Noun, N+N C,D

5. Possessives, inc. possessive pronouns, - C,D

6. Time, Place Deletion - D

7. Complementization - nominalization - C,D
   Factive nominals, infinitive and gerund phrases (cleft S Test)

8. Indirect Q - C,D

* 9. "it" replacement - C D, (R)

10. VP Complements - C D,
    Infinitive (gerund) phrases when Cleft S Test doesn't work

*11. Comparison - C,D, (A)

12. a. prepositional phrases - C,D
    b. Adverb clauses - C,D,
    c. Add'l deletion from clause to form verbal phrases with prep - A,D

13. Indirect Object - R,D

14. Extraposition, and pre- or post-posing of elements - R

15. "it" deletion - D

16. "that" deletion - D

17. Pronominalization, including reflexives - A,D
    exclude 1st and 2nd person and indefinite pronouns

18. Simple conjunction without common morpheme - A

*19. Conjunction with common morpheme or where D occurs - C, (D)

*20. Non-restrictive clauses (conj + rel_ - R, (A); Appositives - R,D, (A)

21. Gapping - A,D

*22. Inversions, especially q-forms - R, (A)

*23. wh-forms - A,D, (R)

24. Expletive there, Indefinite "it" - A,R

Possible Transformations Continued

25. Cleft sentence - A,R

26. Ellipses and reductions (as in conversational forms) - D

27. Emphatic forms of verbs - A (usually do)

Specific Remarks:

1. Please note (list) idioms, mazes, phrasal (2-part) verbs; some may be unanalyzable.

2. Ignore: exclamations
   determiners, pre-determiners
   pre-determiner quantifiers
   - any + N
   - a lot of + N
   - all (of) the + N
   - some (of the) + N

   intensifiers
   one-word adverbs, except as they are pre- or post-posted 14 (R) from regular position following V

3. This, that, these, those: consider as determiners; hence, ignore. Where this (that) is surface subject (or object), note the deleted noun subject (object).

4. Consider got to / have to as Aux; therefore, got to go is aux + V, or the main verb phrase, not V + infinitive.

5. Please note the starred (*) transformations. Whenever you use those numbers, check to see whether the optional ( ) element has occurred. If it has, add the letter denoting it to the number (e.g., 1 D) so it will be recorded as the correct combination.

6. All transformations here are presumed to be examples of one or more of the following four operations:
   - Addition (A)
   - Deletion (D)
   - Reordering (R)
   - Combining (C)

7. This list of transformations is highly experimental and can be expanded or contracted to suit the analyst. Some transformations listed did not occur in the present study, which may be due to the type of students, the assignments or other variables.

8. One refinement of this analysis already tried with college freshmen is to isolate a few critical transformations or operations and analyze writing for those only. Deletion was the critical factor analyzed in freshman compositions.

Student No. 11-23

Final Tally

Total No. sentences - 49
Total No. T-Units - 62
Total No. Words - 489
Total No. Clauses - 72

Total Deviant sentences: Yes 16 No 33

Total Error	Class I	4
	Class II	3
	Class III	0
	Class IV	1
	Class V	9
Total Errors		17

Total TR-Combinations:

A	13
D	14
C	0
R	10
AR	6
AD	34
CD	104
RD	5
ARD	3
ACD	0
CRD	0
Grand Total:	189

Student No. 11-33 Sentence No. 1

Adding trained to be a heart surgeon is no wide stuff.

T-Units 1
No. Words 7
No. Clauses 1

Deviant: Yes ✓ No ___

Error Class I ___
Class II ___
Class III ___
Class IV ___
Class V 1

TA-Combinations:

A ___
S 1
C ___
R ___
AA ___
AS ___
CS 1
RS ___
AAS ___
ACS ___
CAS ___

Student No. 11-22 Sentence No. 2

4 126 17

It will probably be four years before they let me operate alone.

T-Units 1
No. Words 12
No. Clauses 2

Deviant: Yes ___ No V

Error Class I ____
Class II ____
Class III ____
Class IV ____
Class V ____

TA-Combinations:

A ____
S ____
C ____
R ____
AA ____
AS 1
CS 1
RS ____
ARS ____
ACS ____
CRS ____

Student No. 11-32 Sentence No. 3

12a
Until then I just observe.

T-Units 1
No. Words 5
No. Clauses 1

Deviant: Yes ___ No ✓

Error Class I ___
Class II ___
Class III ___
Class IV ___
Class V ___

TR-Combinations:

A ___
D ___
C ___
R ___
AA ___
AD ___
CD 1
RD ___
ARD ___
ACD ___
CRD ___

Student No. 11-33 Sentence No. 4

14 4 12dc 4 18 26 5 4
I already have two years of school training and this is my first time
12dc 5
for being a surgeons assistant.

T-Units 2
No. Words 19
No. Clauses 2

Deviant: Yes ✓ No ___

Error Class I 1
Class II ___
Class III ___
Class IV ___
Class V ___

TR-Combinations:

A 1
C 1
O ___
R 1
AA ___
AO 1
CO 1-1=0
RO ___
ARO ___
ACO ___
CRO ___

Student No. 11-3 Sentence No. 5

The processes is simple.

T-Units 1
No. Words 5
No. Clauses 1

Deviant: Yes ___ No ✓

Error Class I ___
Class II ___
Class III ___
Class IV ___
Class V ___

TR-Combinations:

A ___
S ___
C ___
R ___
AA ___
AS ___
SS ___
RS ___
AAS ___
ACS ___
CRS ___

Student No. 11-73 Sentence No. 6

First the mother must go in and give the patient more confidence in the operation, but this time not even the doctors were confident.

T-Units 2
No. Words 19
No. Clauses 2

Deviant: Yes ✓ No ___

Error Class I ___
Class II ___
Class III ___
Class IV ___
Class V 1

TA-Combinations:

A ___
S ___
C ___
A 1
AA 1
AS ___
CS 1
AS 1
AAS ___
ACS ___
CAS ___

Student No. 11-33 Sentence No. 7

(2) 5 4 4
It was the first heart transplant.

T-Units 1
No. Words 5
No. Clauses 1

Tx-Combinations:

A
D
C
R
AA
AD 1
CD 1
RD
AAD
ACD
CRD

Deviant: Yes ___ No ___

Error Class I
Class II
Class III
Class IV
Class V

Student No. 11-23 Sentence No. 8

The patient lay cold and quiet 19D as we walked in. 12b

T-Units 1
No. Words 10
No. Clauses 2

Deviant: Yes ___ No ✓

Error Class I ___
Class II ___
Class III ___
Class IV ___
Class V ___

TR-Combinations:

A ___
D ___
C ___
R ___
AA ___
AD ___
CD 1
RD ___
ARD ___
ACD ___
CRD ___

Student No. 11-23 Sentence No. 9

17 18 17 1
She knew the dangers but she wanted to live a while longer.

T-Units 2
No. Words 13
No. Clauses 2

Deviant: Yes ___ No V

Error Class I ___
Class II ___
Class III ___
Class IV ___
Class V ___

TA-Combinations:

A 1
D ___
C ___
R ___
AA ___
AD 1
CD 1
RD ___
AAD ___
ACD ___
CAD ___

Student No. 11-03 Sentence No. 10

Professor Jay took her hand and spoke a few words to her. His smile never left his face.

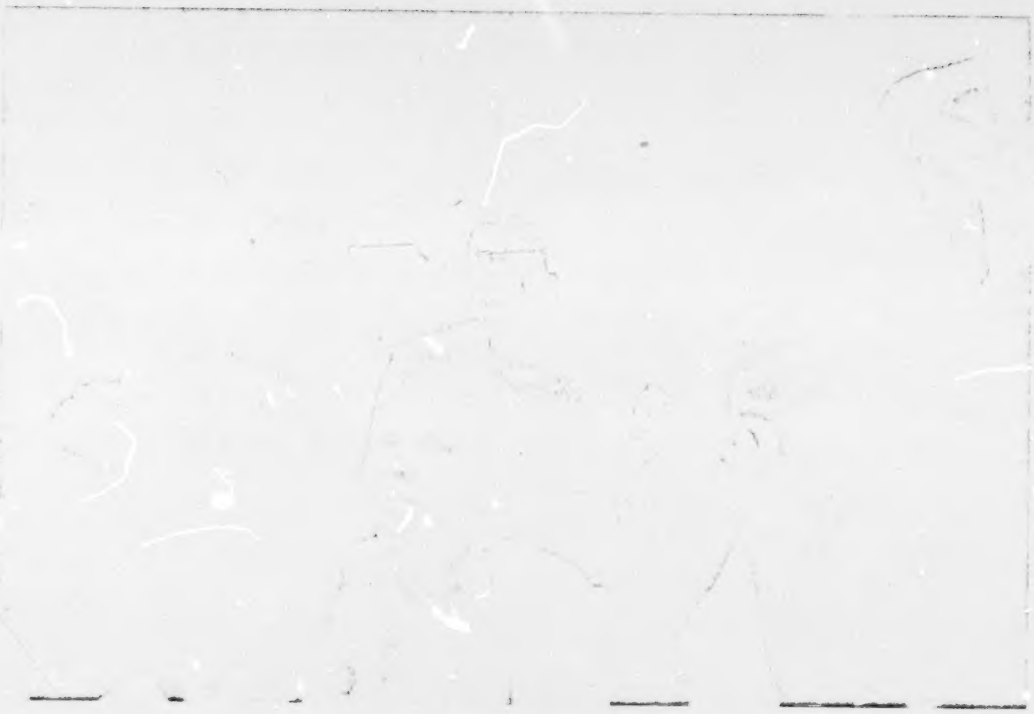
T-Units 2
No. Words 15
No. Clauses 2

Deviant: Yes ✓ No ___

Error Class I ___
Class II 1
Class III ___
Class IV ___
Class V ___

TR-Combinations:

A 1
D ___
C ___
R ___
AA ___
AD ___
CD ___
RD ___
AAD ___
ACD ___
CRD ___



This is a crowd watching a high school sports event -- it could be basketball, football, wrestling, or any other. Notice the strong reactions of many of the spectators. Write a theme in which you describe what is happening here. Questions you might want to answer in your paper are:

1. Who is playing? What sport?
2. What could have happened before this picture was taken? Immediately before? A long time before?
3. What might have happened after this picture was taken?
4. Why are the spectators reacting as you see here? Take one of them, if you wish, and write the entire story from his (or her) viewpoint.
5. How would you feel if you were in the situation in the picture? How would you feel if you were watching one of your friends playing or performing in front of this crowd?

You don't have to answer all of these questions in your paper. Just choose those that suggest something to you. Write about anything the picture brings to your mind. Write as much as you can in the period. These papers will not be graded.

This is a picture of a medical team performing an operation. Write a theme in which you describe what is happening. Questions you might want to answer in your paper are:

1. What kind of operation is this?
2. Who is the patient? What kind of person is he? What kinds of people are the doctors? Take one of them, if you wish, and write the entire story from his (or her) viewpoint.
3. What might have happened before this moment occurred? Immediately before? A long time before?
4. What might have happened after this moment?
5. Imagine the patient's family -- where are they? What are their feelings?
6. What would you think of or feel if you were expecting to have an operation like this? Or if one of your friends had to have an operation?

You don't have to answer all of these questions in your paper. Just choose those that suggest something to you. Write about anything the picture brings to your mind. Write as much as you can in the period. These papers will not be graded.

ABSTRACT

This study attempted to extend the knowledge of developmental levels in writing at the secondary level and to investigate a transformational process of analyzing student writing as a tool for teachers in individualizing instruction. The writing of 9th and 11th grade low achievers was analyzed in terms of the transformations used, to determine which of the four transformational operations each preferred. Correlations established that the transformational variables are not significantly interrelated but that student use of each variable varied individually as hypothesized. Increases in length and complexity of T-units from grades 9 to 11 were not significant, nor were decreases in the errors counted. Deletion was identified as a variable requiring more research. Complementary research with high achievers was suggested.

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TRANSFORMATIONAL ANALYSIS AND COMPOSITION: A NEW TOOL FOR TEACHERS

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Developmental psycholinguistics has progressed rapidly in recent years, describing primarily the oral language development of children. Written expression, or composition, has received relatively less stress, especially at the secondary level. In an effort to fill in some of the gaps in our knowledge of the development of writing skills, a recent study analyzed writing samples submitted by ninth and eleventh graders. The study was designed to complement and extend the work of Loban (7), O'Donnell, et. al. (9), Hunt (4), and Golub (3).

The analytical process was based on generative-transformational grammar; in particular, it derived from suggestions for stylistic analysis made by Ohmann (10). This experimental process sought to describe a student's writing style in terms of the four basic transformational operations: addition, deletion, combining, and reordering. The goal of the study was to develop this process as a tool for English teachers to use in analyzing their students' writing on an individual basis.

Statement of the Problem

Traditionally the teaching of writing has depended on analysis of each writer's work, but this analysis seems to have been based frequently on content and organization, or on grammatical and spelling errors. The present study proposed an analysis based on a positive

evaluation of the incidence of transformations using one or more of the four basic operations: addition, adding two or more elements to a grammatical string (or sentence); deletion, deleting one or more elements from a string; reordering, rearranging the elements in such a string; and combining, putting two or more separate strings into a single new grammatical string (12). The hypothesis tested was that a writer uses one or more of these four basic operations or their combinations more frequently than the others, and that this preference for certain operations is characteristic of his style. To carry this idea further, such a preference would suggest that a teacher direct any instruction to a student toward strengthening his writing in his areas of stylistic preference.

For this study, the sample was limited to low achievers, defined as students who had at least low normal intelligence but below average (lower than C) grades in English. Studies such as Loban's have shown that low achievers may make steady progress in the attainment of skills such as reading and writing. However, they are consistently lower than average and above average students, with the gap between the low and average students increasing as the students mature (7:39-51). Thus, these students are successful when judged by allometric means such as Loban's, but they are failures when compared with their classmates. The apparent contradiction between this allometric success and group failure can be overcome if an individual basis for evaluation is used. There, even a low achiever, with the concomitant problems of defeat, low self concept, and other potential personality difficulties, can achieve some success by being treated and evaluated as an individual.

If an analysis like the one tested here can help a teacher see some positive stylistic features in a low achiever's writing, the teacher can do more to help him and can overlook the more obvious mechanical errors which tend to be present in such papers. The consensus reported in summaries of composition research such as those of Meckel (8) and Braddock (2) seems to be that for real improvement in student writing to occur, teachers need to overcome their preoccupation with the mechanics of usage alone and to deal with the deeper problems of organization and thought. And this deeper organization is, to some extent, a problem of style. As Ohmann says, alternative ways of saying the same thing (in substance) are stylistic differences which affect readers differently but are grammatically correct (10:124). It is possible that a low achiever, given the freedom to develop the style which seems to fit him best, will overcome some of his mechanical difficulties.

Procedures

In this study all ninth and eleventh grade students in the Falls Church High School, Fairfax County, Virginia, were asked to write two themes, given the same stimuli and time. The stimuli were two writing assignments, each consisting of an action picture and a series of questions involving the picture; the questions were designed to elicit as many different kinds of responses, hence sentence structures, as possible (e.g., narration, causation, opinion, attitude). Each assignment was given in one full class period (fifty minutes) in all regular English classes. The sample of low achievers was then determined by

selecting students with grade averages lower than C since grade 7, but with School and College Ability Test (SCAT) scores no lower than one standard deviation below the mean. The sample totaled 60, 29 in the ninth grade and 31 in the eleventh grade. The written samples of these students were analyzed to see what transformations they had used, and then which operations or combinations of operations had been used. The first 500 words of the student's themes were used, with the cutoff point the first sentence-end beyond 500 words.

Table I lists the transformations which were anticipated in the student writing and itemizes the use of the four operations. This list was compiled after considering both current work in linguistics and practical considerations of English teaching (5, 6, 11, 12). In the present data, variables C and CRD did not occur, so the statistical procedures described here include only 9 variables.

TABLE I. POSSIBLE TRANFORMATIONS

*1. Passive, - A, R, (D)

*2. Negative - A, (R)

*3. Relativization - C, D, (A)

4. Pre- and Post-nominal Adjectives, Post-Determiner Quantifiers, Compound Nouns, N+N - C, D

5. Possessives, including possessive pronouns - C, D

6. Time, Place Deletion - D

7. Complementization, Nominalization (Factive nominals, infinitive and gerund phrases) - C, D

8. Indirect Question - C, D

*9. "It" Replacement - C, D, (R)

10. VP Complements (Infinitive, gerund phrases) - C, D

*11. Comparison - C, D, (A)

12. a. Prepositional Phrases - C, D

b. Adverb Clauses - C, D

c. Additional Deletion from clause to form verbal phrases with preposition - A, D

13. Indirect Object - R, D

14. Extraposition, and Pre- or Post-posing of Elements - R

15. "It" Deletion - D

16. "That" Deletion - D

17. Pronominalization, including reflexives (exclude first and second person and indefinite pronouns) - A, D

18. Simple Conjunction without a common morpheme - A

*19. Conjunction with a common morpheme or where D occurs - C, (D)

*20. Non-restrictive Clauses (conjunction + relative) - R, (A); Appositives - R, D, (A)

21. Gapping - A, D

*22. Inversions, especially question-forms - R, (A)

*23. Wh-forms - A, D, (R)

24. Expletive "there", Indefinite "it" - A, R

25. Cleft Sentence - A, R

26. Ellipses and Reductions (as in conversational forms) - D

27. Emphatic Forms of Verbs (usually "do") - A

KEY

A - Addition

D - Deletion

C - Combining

R - Reordering

* - Optional element in this transformation; Check for its presence.

Total Possible Operations and Combinations

A - 3	CD - 11
D - 4	RD - 2
C - 1	ACD - 2
R - 3	ARD - 3
AR - 6	CRD - 1
AD - 4	

Each sentence was examined to determine which transformations had been used (by referring to Table I and placing the appropriate number over the occurrence); after numbering was completed, the numbers were translated into the operation or combination listed for each transformation. Two sample sentences follow, showing the two steps of the process (for the meaning of numbers, refer to Table I):

1. A. 17 10 12a 4
It was an operation to remove a growth from the food tube.

   B. AD - 1

   CD - 3

2. A. 22 4 26,3 4
Pictured is a surgical team/performing a heart operation
12a 3A 4, 14 4
on Mr. Kenneth Moca, who two weeks ago had a heart
3A 4 12a 12a
attack which caused an irregular flow of blood through
12a 4
one of the major valves.

   B. D - 1 CD - 11

   R - 2 ACD - 2

The capital letter added after a number indicates that the optional operation in that transformation (in parentheses in Table I) has been used in this instance. The lowercase letters after 12 indicate which operation under transformation 12 has been used. The Verb Phrase Complement analysis (12) was revised during the process of analysis to reflect more closely the relationship between prepositional phrases and adverbial clauses. In order to avoid renumbering all work done up to that time, the subscripts a, b, and c were used to differentiate the sections of Transformation 12.

The optional operations (in parentheses in Table I) available to the student writers as they used the transformations were used at the discretion (conscious or unconscious) of the writer. An asterisk was placed before each of these transformations to call attention to this possibility. For example, under Transformation 1, Passive, the Deletion (D) process is optional. As a sentence is transformed from active to passive, the writer has the option of deleting the by--- phrase. As a specific example,

I gave John the book

can become:

John was given the book by me,

or:

John was given the book.

Indeed, such a deletion removes from the transformed sentence the deep (or real) subject and leaves only the surface subject. Without judging this deletion as good or bad, it seems safe to say that a characteristic or continuing use of this deletion would affect the resulting writing style. Thus, noting the use of these optional elements is one of the crucial parts of the analysis.

A secondary concern of the study was the determination of grammatical error in student writing, based on the five classes of error developed by Bateman and Zidonis (1). These classes reflect the philosophy of generative grammar, in that only syntactic errors arising from the nature of the language were considered:

Class I: misapplication of a transformational operation;

Class II: use of one transformation when another is required;

Class III: use of a transformation when none should have been used;

Class IV: omission of a required transformation;

Class V: co-occurrence error (the use of mutually exclusvie grammatical elements in kernel sentences) (1:35).

This analysis of error figures in the general discussion below.

Discussion

After analysis of the 2200 sentences in the writing of the 60 students in the sample, totals for each writer on each variable were available. All sentences were coded by the investigator, although a rater reliability check was conducted between the investigator and other raters. All raters coded 100 sentences selected at random from the total written sample, with an obtained reliability coefficient of .94.

Careful study of the raw data shows that students vary enormously in the use they make of the variables listed. For example, despite the fact that all students used CD more than any other variable, the difference between Student 9-24* (174 uses) and Student 9-26 (238 uses) seems important, since each wrote very nearly the same number of words and had the same stimuli and time. Again, the difference in use of the D variable between Student 11-3** (43 uses) and Student 11-2 (8 uses) seems important. Even in a sample as small as this one, large differences in the use of each variable appear. Table II indicates the means and standard deviations of the nine transformational variables,

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*Student 9-24 is the 24th of the 29 ninth grade students.
**Student 11-3 is the third of the 31 eleventh grade students.

the mean number of occurences of these variables in each written sample of 500 words. These individual differences in the use of each variable need further study, with a large enough sample to allow the use, perhaps, of factor analysis. In a larger sample, tests of the group of students who use one variable frequently might show relationships between use of that variable and use of other variables or external factors.

TABLE II

MEANS AND STANDARD DEVIATIONS
OF THE TRANSFORMATIONAL VARIABLES

Variable	Grade 9		Grade 11		Total Group	
	$\bar{x}$	s.d.	$\bar{x}$	s.d.	$\bar{x}$	s.d.
A	14.83	5.32	15.03	5.83	14.93	5.54
D	15.48	7.27	16.55	8.66	16.03	7.97
R	12.66	5.30	12.03	4.50	12.33	4.87
AR	4.97	3.76	3.94	2.19	4.43	3.07
AD	41.55	14.73	33.61	10.10	37.45	13.07
CD	123.28	14.30	123.39	14.07	123.33	14.06
RD	1.93	1.53	2.26	1.61	2.10	1.57
ARD	4.69	3.07	4.32	2.66	4.50	2.85
ACD	3.00	2.42	2.90	2.21	2.95	2.30

Correlations between the nine variables suggested that they are not as interrelated as had earlier been supposed (See Table III). A great many negative correlations occurred, not all of them significant statistically, but nonetheless interesting. In general, variables containing A and D seemed to be negatively correlated, which seems logical since Addition and Deletion are antithetical. Variables D and RD each correlated negatively with six of the other eight variables for the Total Group, including each other. Deletion seemed to be the key factor in this analysis, since it is present in thirty-three of the thirty-six correlations (eighteen of these negative). One conclusion is that student writers' use of deletion seems particularly susceptible to further study. Loban singled out deletion for study in his abbreviated use of transformational analysis. He considered the use of deletion crucial to the analysis of any student's writing. In this study's analysis, the use of deletion correlated significantly at the .05 level with total T-units (an independent clause and all dependent clauses attached to it; 4:20-21), (.34), number of clauses (.35), and number of sentences (.36). It also correlated significantly with the occurrence of deviant sentences (.44), Error Class I (.33), Error Class V (.41), and Total Error Score (.43). Some uses of deletion must be deviant in nature, yet some seem to be indicative of a well developed, mature writing style. A study of the use of deletion in secondary school writing might be able to distinguish between effective and ineffective uses of it and might also direct teachers to the kind of help needed by students who are using deletion ineffectively.

Several parts of the analysis reflected on developmental processes. Hunt, Loban, and O'Donnell's studies, among others, suggested that certain trends in language use were discernible as students mature. Specifically, Loban's study revealed consistent, although sometimes small, increases in words and clauses per T-unit as students moved upward in grade level. He found a similar small but consistent decrease in deviant sentences per sample. His low group, analogous to these low achievers, made steady upward progress, even though this was considerably slower than the progress of average and above average students (4:45; 7:39-57). The same direction cannot be discovered in this study's data. Tests between grade levels on use of the transformational variables were not significant at the .05 level. The expected decrease from grade 9 to grade 11 in the number of deviant sentences per written sample also did not occur ($t=-0.732$). Test of the number of T-units per written sample ($t=-0.346$), the words per T-unit ($t=0.033$), and the clauses per T-unit ($t=0.846$) were similarly not significant.

TABLE III

CORRELATIONS BETWEEN TRANSFORMATIONAL VARIABLES

TOTAL GROUP

Variable	A	D	R	AR	AD	CD	RD	ARD
D	-.04							
R	.05	.16						
AR	.26*	.10	-.10					
AD	.12	-.01	.19	-.08				
CD	-.31*	-.13	.08	-.31*	.01			
RD	-.03	-.05	-.11	-.09	-.02	.08		
ARD	.18	-.06	-.12	.01	.17	.23	-.02	
ACD	-.08	-.02	-.12	-.13	.01	.10	.01	.11

*Significant at .05 Level

A number of questions remain unanswered by this study. The developmental process in writing is not clear, at least as it applies to these low achievers. A companion study of high achievers might clarify the data presented here to see whether the trends between grade levels are characteristic of most students or only of low achievers. The practicality of the use of this transformational process by teachers needs to be tested at all grade levels. However, the study reveals that this experimental process does distinguish one student from another on the basis of his individual stylistic preferences. This provides a foundation for further work in individualizing writing instruction and basing the instruction provided on solid developmental grounds.

REFERENCES

1. Bateman, Donald and Zidonis, Frank. The Effect of a Study of Transformational Grammar on the Writing of Ninth and Tenth Graders. Champaign: National Council of Teachers of English, 1966.

2. Braddock, Richard, Lloyd-Jones, Richard, and Schoer, Lowell. Research in Written Composition. Champaign: National Council of Teachers of English, 1963.

3. Golub, Lester S. "Linguistic Structures of Students' Oral and Written Discourse." Research in the Teaching of English, 3:1, Spring, 1969, pp. 70-85.

4. Hunt, Kellogg W. Grammatical Structures Written At Three Grade Levels. Champaign: National Council of Teachers of English, 1965.

5. Jacobs, Roderick A., and Rosenbaum, Peter S. English Transformational Grammar. Waltham, Mass.: Blaisdell Publishing Company, 1968.

6. Lakoff, Robin T. Abstract Syntax and Latin Complementation. Research Monograph No. 49. Cambridge: M.I.T. Press, 1968.

7. Loban, Walter D. Stages, Velocity, and Prediction of Language Development, Kindergarten Through Grade Twelve. Washington, D. C.: United States Department of Health, Education, and Welfare, March, 1970.

8. Meckel, Henry C. "Research on Teaching Composition and Literature." In N. L. Gage (Ed.), Handbook of Research on Teaching. Chicago: Rand McNally and Company, 1963. Pp. 966-1006.

9. O'Donnell, Roy C., Griffin, William J., and Norris, Raymond C. Syntax of Kindergarten and Elementary School Children: A Transformational Analysis. Champaign: National Council of Teachers of English, 1967.

10. Ohmann, Richard. "Generative Grammars and the Concept of Literary Style." In Mark Lester (Ed.), Readings in Applied Transformational Grammar. New York: Holt, Rinehart, and Winston, Inc., 1970.

11. Ross, John R. "Constraints on Variables in Syntax." Unpublished doctoral dissertation, M.I.T., 1967.

12. Stageberg, Norman C. An Introductory English Grammar. New York: Holt, Rinehart, and Winston, Inc., 1965.